

XX International Workshop on Neutrino Telescopes



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CLOUD: A New Generation of Neutrino Science at Chooz

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The new **CLOUD** experiment, supported by the eponymous international collaboration (16 academic institutions and EDF), will be presented for the first time. **CLOUD** relies on the first ever ~10-ton **LiquidO** detector, which will be deployed at the new Chooz's "ultra-near detector" site, located at ~30 m from one of the nuclear reactors with minimal overburden. With $\geq 10,000$ antineutrino interactions per day and an expected signal-to-background ≥ 100 , **CLOUD** is designed for unprecedented fundamental physics. The **CLOUD-I** addresses the fundamental physics programme associated with the primary goal of the fully-funded (EIC & UKRI) **AntiMatter-OTech** innovation-based project that aims to develop non-intrusive industrial reactor monitoring. Also under active exploration, the subsequent **CLOUD-II** and **CLOUD-III** are independent neutrino scientific programmes exploring novel solar and geo-neutrino detection methodologies otherwise impossible today. The proposed presentation would thus describe the next generation of Chooz-based experiments within the scientific prospect of the large **SuperChooz** experiment —also under exploration.

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